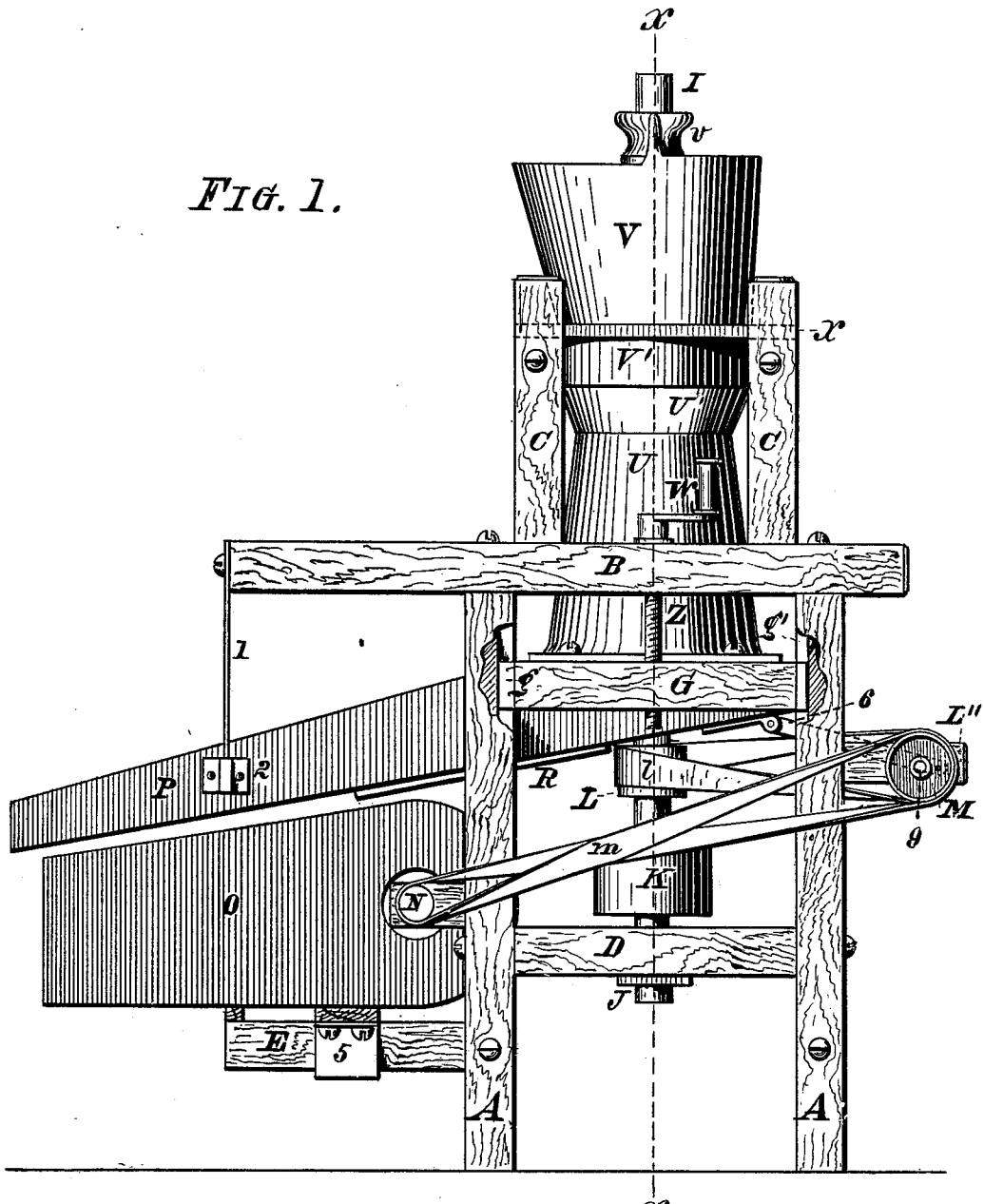
E. WARD & Z. IRISH,

A. WARD, Admr'x., of E. WARD, Dec'd.

Corn-Sheller.

No. 221,484. Patented Nov. 11, 1879.

FIG. 1.



Witnesses:

Michael J Stark

Frank Hirsch

Anna Ward admx Inventors:

of Elisha Ward

deceased,

Zena Irish

by Michael J. Stark Attorney.

2 Sheets—Sheet 2.

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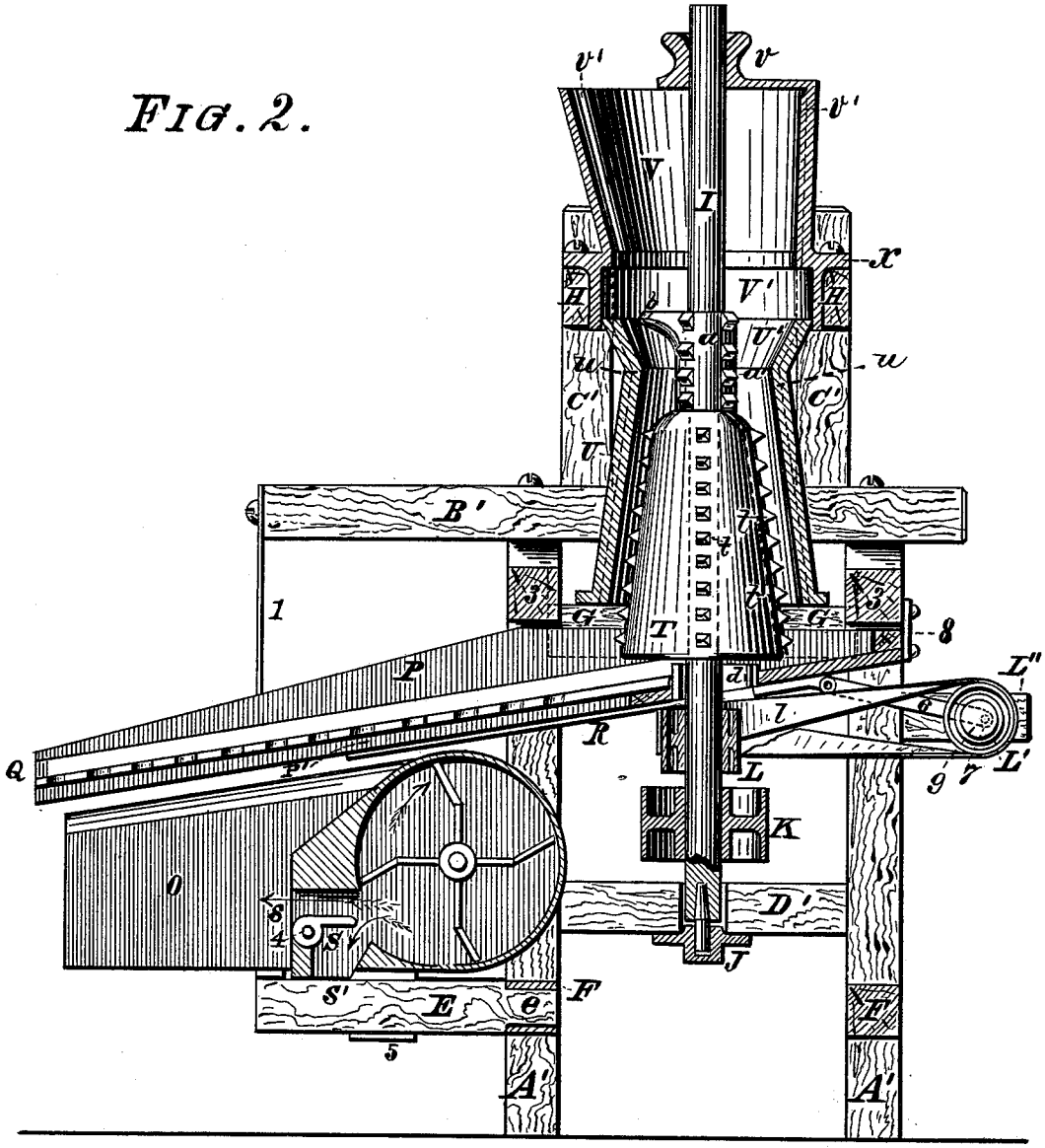
FIG. 2.



Witnesses:

Michael J. Stark

Frank Hirsch

Anna Ward Admx. of Elisha Ward deceased,
Zena Irish

by Michael J. Stark Attorney.

Inventors:

UNITED STATES PATENT OFFICE.

ANNA WARD (ADMINISTRATRIX OF ELISHA WARD, DECEASED) AND ZENA IRISH, OF SILVER CREEK, N. Y.; SAID WARD ASSIGNOR TO SAID IRISH.

IMPROVEMENT IN CORN-SHELLERS.

Specification forming part of Letters Patent No. **221,484**, dated November 11, 1879; application filed March 10, 1879.

To all whom it may concern:

Be it known that we, ELISHA WARD and ZENA IRISH, both of Silver Creek, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Corn-Shellers; and we do hereby declare that the following specification of our said invention, taken in connection with the accompanying sheets of drawings, forms a full, clear, and exact description, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to corn-shellers; and it consists in the peculiar arrangement of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claim.

In the drawings already referred to, Figure 1 is a front elevation, and Fig. 2 a longitudinal sectional elevation.

The same parts are designated by the same letters of reference in both figures.

This machine is mounted upon a wooden frame, composed of four uprights or posts, A A′, carrying on their top two horizontal beams, B B′, upon which in turn are placed four short uprights, C C′, united by cross-timbers H H, said uprights A A′ being connected together by cross-beams D. The uprights A A′ are connected by four cross-timbers, F F and 3 3. Each of the uprights A A′ has near its upper end a gutter or groove, *g′*, wherewith engage tenons *g* on the cross-pieces G. This frame is arranged to carry, upon the cross-timbers G, a cylinder or casing, U, fastened to said timbers by means of screws, as clearly shown in Fig. 1. This cylinder has the shape of a double cone, and is provided in its interior with prismatic longitudinal projections or ribs *u*, (indicated by broken lines,) serving as stops for the corn-cobs, as hereinafter more fully described. The cross-beams G carrying this cylinder are rendered vertically adjustable by means of screws Z, having crank-handles W, said screws having their thread engaging internal threads in said cross-beams G.

Upon the beams H is fixed a hopper, V, having a flange, *x*, and a cylindrical lower part, V′, said hopper V being provided with prismatic projections *v′*, the same as the cylinder U. The cylindrical part V′ is of an internal diameter corresponding with the extreme diameter of the flaring part U′ of the casing U, and adapted to receive said flaring part.

The cross-beams D D′ are connected by a plate, J, having centrally a step-bearing for an upright shaft, I, in the usual manner. Upon this shaft are secured a main pulley, K, a driving-pulley, L, a conical cylinder, T, and a stirrer, *a;* and it revolves, with its upper end in a bearing, *v*, on the hopper V.

The uprights A A′ have sidewise-projecting pieces, L″, carrying a crank-shaft, 9, driven from the pulley L by a pulley, L′, on said shaft 9, and a belt, *l*, connecting both pulleys. This shaft 9 has on its outer extremity a pulley, M, Fig. 1, which gives motion to a fan by means of a belt, *m*, connecting said pulley M with the pulley N on the fan-arbor. It furthermore gives motion to a sifter, P, by means of a connecting rod or link, 6, operated by a crank, 7, on said shaft 9. The fan-casing is supported upon a beam, E, and fixed thereto by a strap, 5, said beam E having its tenon *e* engaging a mortise in the beam F. Within the discharge-opening of this fan is placed a bridge, 4, thus dividing said discharge-opening into two branches, *s s′*. To this bridge is pivoted a flap, S, fitted sufficiently tight between the walls of the fan-casing to remain in any position to which it may be set. Its purpose is to adjust the discharge through the branch *s*.

Above the fan-casing, and placed between the uprights, is a sifter, P, suspended from the beams B B′ by means of slender rods 1 near its front end and by a flexible connection, 8, from the beam 3 on its rear end. This sifter has a perforated bottom or diaphragm, Q, and a false bottom or plate, R, underneath said diaphragm, thus producing a space, P′, between said diaphragm and plate for the passage of the corn falling through the perforated diaphragm to lead it in front of the fan-casing O. In said diaphragm is an oblong opening or slot for the passage of the shaft I, said slot being lined with a metallic jacket, *d*, reaching up above the plane of the diaphragm a sufficient distance to prevent the corn or cobs from

getting into said slot, and thus to interfere with the vibration of said sifter.

The cylinder T has a series of four rows, more or less, of prismatic projections, *t*, arranged in vertical rows, which projections, in conjunction with the projections *u* in the casing U, serve to remove the corn from the cobs. To compensate for the decrease in diameter of said cobs as the removal of corn proceeds, the said cylinder is made larger in diameter on its bottom end in proportion to the internal diameter of the casing U, so that the space between the cylinder and casing decreases toward the bottom end. To render this space adjustable, and thereby to accommodate all sizes of cobs, we have made said cylinder U adjustable vertically by means of the screws Z, so as to increase or diminish the space between the cylinder and casing.

In order to render the machine more convenient in putting up with reference to already-existing machinery, shafting, &c., to drive the same, we have designed this machine to run in either direction, and for this purpose have arranged the teeth *t* in the cone T so as to have their cutting-edges in opposite directions, which allows the cylinder to be revolved in either direction, or first in one, and, after the respective teeth are worn and dull, in the opposite, direction, no further change being required for this purpose but to change the belts *l* or *m* from a crossed into a straight one, or vice versa. By this arrangement the machine may be placed in any position and operated at once, without the necessity of first ascertaining the direction in which it should be run.

The cone T, with its teeth *t*, being subjected to considerable wear, we render it as durable as possible by making said cone in sections in the following manner: We first cast narrow strips having the teeth *t*, as indicated in dotted lines, Fig. 2, said strips being produced of chilled metal. These sections we then place into a mold, and finish the cone by casting soft metal into the space intervening between the sections. In this manner we produce a cone possessing the double advantage of first being readily produced in the process of casting without complicated molds, and then that the wearing-surfaces are hard, while the intervening parts are soft and somewhat ductile, thus combining in one cylinder the good qualities of hard and soft metals.

Above the cone T is placed the cylinder *a*, having a projecting finger, *b*. This finger serves to arrange the cobs in a vertical position, to enable them to slide down between the cone T and casing U.

We do not claim a toothed cone having hard teeth set into sections of softer metal, said sections being homogeneous, as a cylinder having this construction is shown in the patent of J. B. Stamour, October 15, 1878, No. 208,997; but

What we do claim, and desire to secure by Letters Patent, is—

In a corn-sheller, a toothed cone consisting of sections of hard and soft metal alternately arranged, the teeth being cast with the hard-metal sections.

In testimony that we claim the foregoing we have hereto set our hands and affixed our seals in the presence of two subscribing witnesses.

ANNA WARD, [L. S.]
Administratrix of Elisha Ward, deceased.
ZENA IRISH. [L. S.]

Witnesses:
MICHAEL J. STARK,
J. B. ARCHIBALD.